Case Study

Namibia

Integrating ICTs in Education

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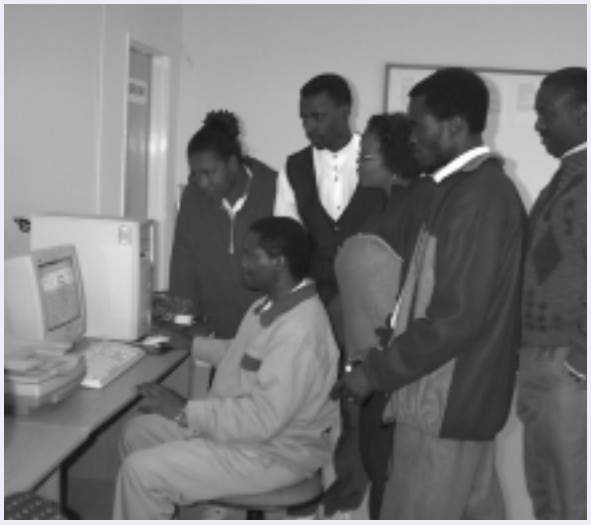
At the end of two years, the Computer-Assisted Teacher Training (CATT) project in Namibia held a conference in Windhoek for educators from the four target regions and representatives from the project's host agency, the National Institute of Educational Development (NIED). All together, approximately 40 educators, 10 from each region, came together to discuss their experiences exploring ICTs and integrating them into education in Namibia. Among the many outcomes of the conference, perhaps the most important concerned the post-conference assessment. Without exception, all participants agreed that, as a result of the project's implementation approach, they now believed that they could do this on their own. Now they could creatively integrate technology into education, continue to develop their own ICT skills, and lead their fellow educators and community members in using ICTs as tools for education and development in Namibia.

The conference was the project's final event and signaled the end of CATT/Namibia's work. It is also the end of this story. To explain how the Namibian participants and partners got there—and how the project managed to achieve its goal of self-actualization—the project's origins, activities, and approach need to be explored. This is the story as it unfolded in Namibia.

> “Now I can do this on my own”



Namibia and Education in the 1990s

Located in southwest Africa and home to almost 1.8 million people, Namibia is a vast land of some 800,000 square kilometers, approximately twice the size of the US state of California. While a few small cities and towns have a moderately high population density, the distances between these towns create major obstacles to professional exchanges between educators.

From the beginning, the project believed information and communication technologies (ICTs) could reduce and even render these distances irrelevant, enabling educators around the country to share best practices and brainstorm ideas for integrating technology throughout the education system.

After its independence from South Africa in 1990, Namibia was beset with challenges, many emerging from the vestiges of apartheid's social and economic policies. Even after a transition to democracy and the formation of a democratically elected government, wide disparities in social and economic development persisted bolstered by a poor economic system.

The new government began addressing systemic education problems by establishing a new Ministry of Education, which eventually separated into two—one ministry primarily focused on higher education and another on primary and secondary education. The government also consolidated many smaller, race-based education authorities into a unified education system and took steps to enhance the relevancy of Namibian education for its new society.

Soon after independence, the government also formed the National Institute for Education Development (NIED). A division of the Ministry of Basic Education, Sport and Culture (MBESC), NIED is a "think tank" for mobilizing resources to improve education. Its two units undertake educational research and develop resources and curricula for the nation's primary and secondary schools and teacher training programs. NIED works with teachers, schools, Teacher Resource Centers (TRCs), regional offices, the MBESC central offices, as well as colleges and international organizations concerned with educational research, resources, and development.

Although apartheid resulted in limited access for many Namibians to economic and development opportunities, the nation inherited and has developed an ICT infrastructure unsurpassed by almost any other country on the continent. Linked by fiber optic cable to South Africa and by satellite to the Netherlands, the nation was in an excellent position to introduce ICTs into education.

The MBESC prepared A Ten Year Plan for Educator Development and Support (2000–2010) that proposed establishing Educational and Development Support Units in all regions to meet the professional development needs of teachers and administrators. Another goal was to expand access to resources for teaching and learning as well as to improve educational administration. Underlying these objectives was the aim to reduce the disparities in teacher and administrative preparedness throughout the country. NIED, a major training and support service provider, eagerly adopted ICTs to deliver these services.

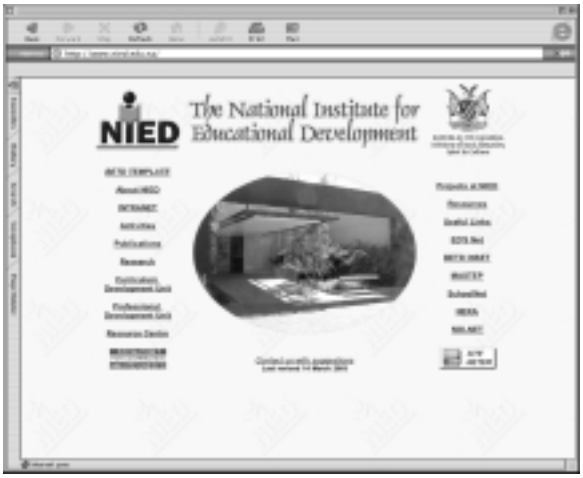
Supporting Namibian education: an overview

The US Agency for International Development (USAID) supported Namibia's emphasis on enhancing basic education and teacher training through the Basic Education Support Projects (BES and BES II), which focused on upgrading the quality of the primary school curriculum, teaching, and management. The CATT/Namibia project[1] was a separate activity, implemented through the LearnLink program, which complemented BES. CATT's goal was to use ICTs to strengthen professional development and provide continuous educational support to teachers and administrators throughout the country.

Namibia is a young country that is looking toward the future as it integrates modern technology into its education system. CATT/Namibia was developed to help introduce ICTs to facilitate educator communication and provide distance learning and web-based research opportunities for teachers and administrators. The project also was asked to develop computer centers within NIED in Okahandja and within Teacher Resource Centers (TRCs) in Rundu, Katima Mullilo, and Ongwediva.

As connectivity spread throughout the country, the project envisioned NIED serving as a "hub," linking the multimedia centers and gradually extending out to local schools.

Connectivity was achieved at NIED and the TRCs with leased lines and computer installation provided via a collaborative effort between UUNET, an international Internet bandwidth provider, and SchoolNet/Namibia, a local education NGO and its



http://www.0.nied.edu.na

young, computer-savvy volunteers known as "Kids on the Block." The computer centers offer multiple interactive resources for teachers, students, administrators, and community members, such as Internet and email access. Resources provided online via the project-supported web site, ED'S Net (www.edsnet.na), include a library of resources and training materials plus support for computer hardware and software use and curriculum development.

As teachers and administrators gradually applied ICTs to learning and management functions, they were better able to communicate with colleagues and access useful information, knowledge centers, and resources. By creating a virtual community in the education sector, especially in the historically disadvantaged northern regions, it also was expected that educators would be able to draw on multiple multimedia capabilities—email, listservs, chat messaging, web sites, discussion forums, file sharing, and voice and video communication—for building a community of committed educators.

It was hoped that by providing non-educators with access to ICTs at the centers—and providing models of effective ICT use by educators—an ancillary effect of the project would be to help increase ICT capacity in other sectors of Namibian society. With support from NIED and the Ministry, ICT integration in Namibia would occur not only in formal education institutions but also at the community and grassroots level, where it would facilitate lifelong learning for personal and professional purposes.

The Purpose and the Approach

The project began with five objectives.

1. Develop the capacity of National Institute for Educational Development (NIED) staff to develop multimedia teacher-training materials;
2. Establish an information and communications network for education professionals;
3. Support the development of prototype teacher-training materials for primary school educators;
4. Support the development of a cadre of technology champions within the Ministry of Basic Education, Sport and Culture (MBESC); and
5. Provide ICT policy support to NIED and the MBESC.

When determining how to achieve these objectives, the project sought a model of learning based on inclusion and self-guided interaction with learning materials and knowledge. The model should encourage exploration, discussion, and integration of ICTs, as well as introduce a process that would result in the transference of ICT skills to Namibian educators, enabling them to continue the effort after the project's end.

The link between the goals and the approach was CATT/Namibia's strength and the key to any lasting effects it would have within Namibia. The project planners knew a process needed to be established that educators eventually could follow on their own. Therefore, the project sought to model in its approach the goals of Namibia's education reform—

to develop a model consistent with the context in which it was to be implemented. For this reason, the implementation approach was considered as much a "deliverable" as were the project's stated objectives. Pitted against timelines, deadlines, and budget constraints, accomplishing this was not easy.

A Constructivist Approach

Throughout all its stages, the project's approach was to encourage critical thinking and reflection, both of which were regarded as strong components of Namibia's current education reforms. More specifically, the approach frequently modeled what is called *constructivism* in education. This is the idea that people construct their own knowledge from their experiences and interactions, as well as from their reflections on these experiences and interactions. While constructivist theories are more complex than that, the project approached its work believing that Namibian educators would be able to successfully construct knowledge, or rather, successfully learn, if a suitable environment were created in which they could do so. It was as simple and as complex as that.

The CATT/Namibia project had no intention of dictating how to integrate ICTs into Namibian educational contexts. Indeed, no one had ever even tried to integrate ICTs into all levels of the education system in Namibia before, and the project did not know, for sure, what would work.

Contrary to some critical interpretations, the constructivist approach requires extensive guidance and leadership, which occurs mainly behind the scenes. It has been called an "invisible pedagogy," one in which facilitators create a fertile learning environment along with a minimal amount of thoughtful structure that encourages people to explore and learn on their own. The structure must be both clear and easy to follow while remaining wide open for exploration and contemplation, and it must accommodate both new and more experienced users to learn.

What the project created was a series of structured interactions that allowed genuine learning and adoption to take place. The process provided guidance and support from start to finish in a way that valued, considered, and integrated participants' ideas and concerns throughout. In addition to creating settings where participants could be successful, the project also continuously explained what was taking place—and why—so they could learn how to produce similar learning experiences for others.

Successes and Lessons

Through the project's "invisible pedagogy," Namibian educators worked both independently and together to create and manage web sites, explore new software programs, research ideas for further study, and draft ICT policies. Previously out-of-work youth created self-guided, ICT learning materials first in English and later in the indigenous Namibian languages of Oshiwambo, Rukwangali, and Silozi. These same youth empowered new users with those materials. Ministry officials created regional teams of educators to explore what technology can do for Namibian education and how best to integrate ICTs into teaching, training, and management practices.

The process illustrated in the following examples began by including stakeholders in the design and implementation of the activities. This is not simple. It often involved working with the central offices of two ministries of education, an educational think tank (NIED), an education and technology NGO (SchoolNet/Namibia), as well as regional education officers. It also involved extensive discussions with all stakeholders to develop a plan that respected the context and founding principles of educational development in Namibia while introducing new ideas.

Equal Exchange of Ideas

The project viewed every interaction in the process as an opportunity to model inclusion. To this end, a major concern was the language used in the interactions. To be truly inclusive, to enable every participant to feel like an equal partner in the proceedings, the choice of language must invite this desire and reflect this intent. In practice this meant, for example, not employing traditional terms such as "workshop" or, worse still, "training." These terms lend themselves to notions of facilitator/participant, expert/novice. While useful in some situations, they do not fit the constructivist approach that this project employed. If the project sought to encourage an equal exchange of ideas, how could it expect "novices" to feel confident enough to speak freely in

the presence of "experts?" The project minimized the "us" and "them" phenomenon that characterizes many workshops, trainings, often even meetings. By carefully considering the language used, one begins to understand the important distinctions involved in such simple terms. While CATT/Namibia does not claim to have changed this cultural hierarchy in the target areas, the project nevertheless employed a new paradigm that enabled everyone to work together as a team and, in turn, contribute to the project's successes.

Champions Emerge

The project worked with groups of educators to identify and support the development of "technology champions" in the target regions. They devised ways in which ICTs could be used to enhance education and also shared their ideas with others, stimulating widespread discussion about the potential and possibilities of technology use in the education sector.

To design the "champion development" program, project staff worked closely with ministry colleagues to determine the best approach for working with the groups from whom—it was hoped—the champions would emerge. The project staff determined that

- The teams should be heterogeneous and include representatives from as many education stakeholder groups in the regions as possible.
- The teams should be organized in a way that encouraged communication between multiple stakeholder groups both within the Ministry of Basic Education and between the Ministries of Basic Education and Higher Education.
- The process should model learner-centered practices.
- The model should not be dependent upon or create a dependency for further training inputs.

In addition to these implementation requirements, the project also wanted to avoid pitfalls that it had seen in other projects and in other forms of technology training. Therefore, to the above list, the project staff determined that

- The process should not encourage a formal top-down training model but should seek to encourage a model based on wide, lateral spread.
- The process should not develop large, modularized ICT training manuals because, from the project's perspective, manuals are seldom used and do not model learner-centered practices.
- The process should help the learners overcome their basic fears of technology.
- The process must be able to work with and for groups of users ranging from novices to those moderately advanced.

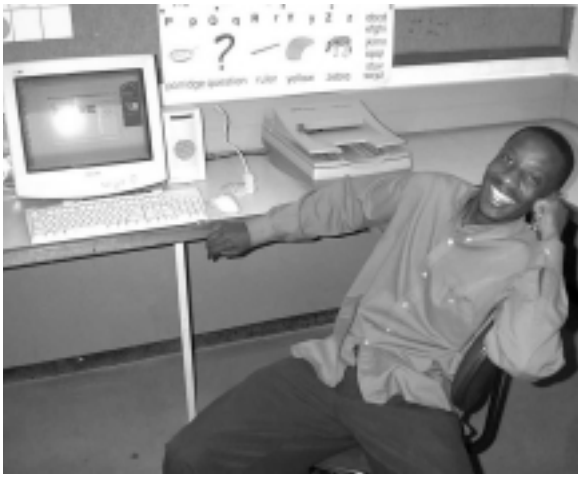
To ensure the most effective process possible, the project carefully considered who technology champions are, what they do, and how they can be identified. From the project's perspective, technology champions

- actively seek out new technologies to explore;
- learn through active experimentation;
- tend to seek help via networks of other champions;
- creatively consider how technologies can be used and actively experiment with these uses;
- share their ideas and experiences with others; and
- encourage others to use technologies in their work.

Open, Shake and Share

To meet all these expectations, the project worked with Ministry staff to develop a process it called OSSIAR, which is short for "Open, Shake, Share, Imagine, Act…and Reflect." The OSSIAR model, derived from the "active and reflective play" process children use to learn about new technology, incorporates Namibian pedagogical priorities such as action research and reflective practice. The facilitator is responsible for creating a fertile learning environment, minimizing the element of fear, getting participants started on exploring the technology, and encouraging them to work with each other, share information, imagine how the tools may be used, and reflect upon their learning experience.

Using this model, the Ministry and the project worked together to develop teams of professionals in each of the four target regions to explore the uses of technology for education in Namibia. Each Regional Education Technology Team (RETT) was encouraged to include members representing advisory services, the inspectorate, classroom teachers, teacher training college faculty, student teachers, principals, and teachers from adult and continuous education. The membership was heterogeneous, included members from both Ministries of Education, and represented most stakeholder groups in the regions.



SchoolNet volunteers

The project's work with the RETTs included facilitating three meetings with each team, followed by a National RETT Conference in Windhoek. While the project did not formally train these professionals, the groups were encouraged to explore ICTs using:

- Discover Windows 98
- Mavis Beacon Typing Tutor
- Microsoft PowerPoint
- Internet Explorer
- Internet Detective
- web-based email
- chat rooms
- CD writers
- Teleconferencing cameras
- digital cameras
- Webster development
  the ED'S Net Webst

Materials developed for this work were simple, one-page instruction sheets called (OPIs). They were used to help participants get started using a new piece of technology or software.

Team members became quite active in their roles as technology champions, choosing to share their training experiences with relatively large numbers of colleagues. Though the qualitative results are difficult to monitor, the quantitative impact of this "cascade" effect is impressive. For example, every RETT reported that its team members trained at least 100 others in each region.

Taking Chances

Providing hardware and connectivity is frequently the easiest component of a technology project. Yet this process also yielded a valuable lesson. In the end, the project successfully worked with partners to install computer centers at NIED and three regional Teacher Resource Centers. Each center received at least seven Microsoft Windows workstations, a scanner, laser printer, digital camera, a simple web camera, CD burner, and 24-hour lease line connectivity.

When establishing the centers, the project took a chance by asking a new education and technology NGO, SchoolNet, to serve as the vendor for procuring and installing the equipment, local area networks, and connectivity. Before this project, SchoolNet had not worked with lease-line connectivity and had never undertaken a project of this scale. Despite a few delays, SchoolNet's team of young volunteers performed admirably in delivering on their contract. Not only did SchoolNet establish the labs, the group developed valuable new capacity at the same time. Because SchoolNet was included in the process from the beginning, they gained practical experience that enhanced their technical and organizational expertise.[2] During the course of the project, they also launched a new service as an Internet Service Provider for educational institutions. The project computer centers became the first leased line customers connected to their system, effectively cutting costs to a small fraction of retail connectivity. After the project ended, SchoolNet

continued to provide significant technical support and training to staff at the centers.

Opening Doors

Use of the centers also has also been impressive. By the project's end, the total combined number of registered and paying users at the centers had reached just under 1,000, 40% of whom were female, 36% education professionals, 23% teachers in training, and another 30% students. The final 11% were community members, all of whom paid to use the centers' equipment and facilities. This represents a small but valuable income stream for the centers, and, significantly, heralds a new willingness on the part of the Ministry to open its facilities to the community in a way that helps share resources and costs.

Perhaps most impressive, all of this occurred in less than a year.

Training Technology Managers

To ensure effective management and operation of the computer centers, the project trained managers for the Teacher Resource Centers (TRCs) as well as Education Technology Trainees (ETTs) for the NIED and for the resource centers in Rundu, Katima, and Ongwediva. Training focused on the following topics:

- center policies
- introduction to computer equipment
- managing TRC funds
- generating revenue
- budgeting
- computer troubleshooting
- lending procedures
- training uses
- marketing

The ETTs also were provided additional training in computer "basics" and fundamentals of professionalism to ensure that all had baseline knowledge to prepare them for work in the centers. This included

- Microsoft Word
- Microsoft Excel
- Internet Explorer
- Outlook Express
- printers
- zip drives
- CD rewriters
- Scanners
- teleconferencing cameras
- digital cameras
- center management tips
- searching for educational web sites.
- Microsoft Excel
- network administration
- basic web design

Much of the work with both the TRC managers and ETTs began early in the project, while the constructivist approach was still developing. Therefore, these interactions tended to be characterized by "expert/novice" relations. Instead of users leading their own learning, we had unwittingly created consumers of training instead of creative ICT users.

As we adopted a well-structured though much more open-ended approach, the focus shifted from "training" to exploring, and the ETTs began to create self-guided learning materials to use in their regional centers. ETTs also shared their materials with other regions, where they were translated into local languages.

The "Home Furniture" Approach

Known as the Educational Development and Support Network (ED's Net), the CATT/Namibia web site incorporates content from other USAID and NIED education projects. Most importantly, the web content focuses on dynamic teaching philosophies, approaches, and pedagogy compatible with the introduction of technology to enhance learning. Online training modules, resource materials, and chat opportunities gradually were added to the web site. The web site features an open, highly interactive architecture and constructivist, learner-centered pedagogy.

ED'S Net contains almost 50 professional training modules covering basic teacher training topics, management topics, and materials on HIV/AIDS. Other features of the site include interactive discussion boards and areas where professionals in the field could post resources. All together, the site offers

- 20 Teacher Basic Competencies Modules (TBCMs), converted to HTML and published online;
- 3 BES II Management Modules converted to HTML and PDF and published online. This work was intended to provide models relevant to inspectors, managers, and principals;
- 5 HIV/AIDS Education Modules in Microsoft Word and My Future Is My Choice Program

materials published online at the request of the Ministry's HIV/AIDS Committee. These materials demonstrated how information could be shared over the web and provided a model for providing teacher training content online;

- 18 STAMP 2000+ General Education Modules published online in PDF format. A key professional at NIED provided these modules, covering a variety of basic education topics, via his contacts with the SADC (Southern Africa Development Community) Ministries of Education and the Commonwealth of Learning;
- 40 One-Page Information Sheets (OPIs). Providing basic training and guidance for Ministry Officials and other educators, these sheets covered topics such as accessing and using Discover Windows 98, Windows Help features, ED'S Net's communication features, web-based email, a program to help users search the Internet and identify quality sources of information, and 20 pages on the basics of web site development, among others.

ED'S Net was designed by Namibians for Namibians. While the project team could have produced the web site, enabling the users to produce it proved far more effective. The process undertaken can be described as the "home/furniture" approach, in which CATT/Namibia provided a largely content-free, "scaffolded" space to be filled—a home waiting for its Namibian residents to furnish it. It is a strong, solid, well-built home that NIED was able to furnish with the help of colleagues throughout the country and friends throughout the world.

By working with NIED to develop the initial idea for ED'S Net, the project established that this was NIED's web site, not CATT/Namibia's. This was an important distinction to make from the beginning. It allowed NIED to make recommendations and work together with project staff to create the site on their own, assuming the roles of webmaster and site developers, as described below.

A New Webmaster

One of the great project success stories is that of the NIED library assistant, Ms. Boshoff, who redesigned the NIED web site, developed a NIED Intranet, and was trained to assume the position of ED'S Net webmaster. The project also worked with her so she could assume additional network management responsibilities, as well as provide basic troubleshooting support for NIED's computer equipment. Before Ms. Boshoff took over these responsibilities, they were in the hands of foreign consultants and volunteers.

Applying New Skills

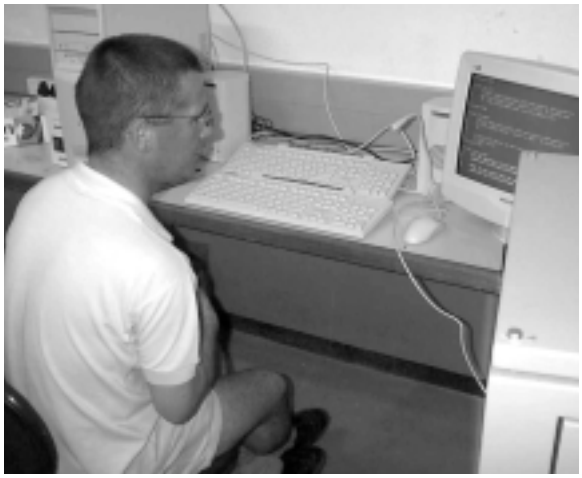
Project staff and NIED management agreed that NIED should create a specific group within the Institute responsible for designing materials for posting on the web site. By the time the project's support to the Multimedia Working Group (MMWG) ended in December 2001, the project had worked with the group on

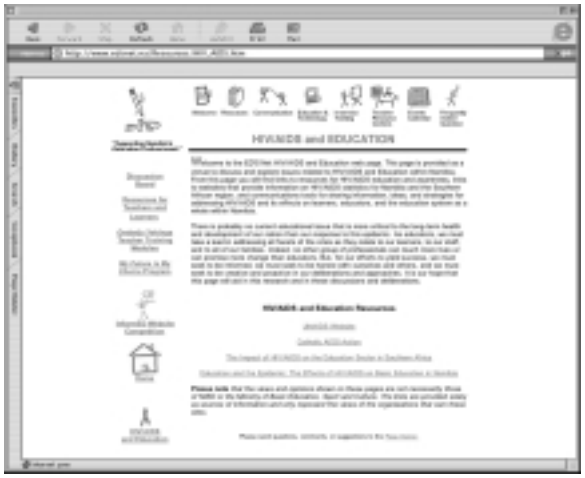
- HTML;
- Internet communications tools;
- Web-based training materials;
- Teaching and learning in a multimedia environments;
- Incorporating video into teaching/training materials;
- Video planning and production; and
- DreamWeaver and Fireworks web authoring packages.

Using these new skills, the MMWG team produced the first year of the Namibian in-service teacher training program modules for publication on the ED'S Net site. One team member even developed web pages in Oshindonga, a local language in Namibia, which were posted on the site.

HIV/AIDS and ICT

Another unique feature of this project was its focus on HIV/AIDS, which currently affects about one in five Namibian adults and is reducing the number of available teachers and technical professionals. Information on local and international HIV/AIDS education and life skills programs was posted on the ED'S Net site, as were details about the InformEd Webster Competition, a web development contest for Namibian schools to create web sites around the topic of youth and sexuality. Almost 40 school-based teams registered for this first annual competition, which includes a grand prize trip to an international Education and Technology conference for the winning team.





Local news highlights ED'sNet web site and HIV/AIDS health coverage

Out-Of-Work Youth and ICT

The computer centers that the project created were managed by out-of-school youth or female high school graduates with low skill levels, who received intensive training in computer technology, applications, network maintenance, and management. As a small step toward gender equity, hiring female managers helped to offset the predominance of males in ICT positions in Namibia.

In early discussions between NIED and project staff, NIED asked the project to be very careful in selecting staff members to serve in the Teacher Resource Centers (TRCs). One concern was that the project would hire teachers and professionals away from the Ministry and pay them salaries that would be impossible for the Ministry to continue when the project ended. Another concern was that finding adequately trained people in the regions would be difficult if not impossible given the salaries that the Ministry could afford.

In response, the project and its partners pledged to try a different approach. Rather than search for experienced staff to run the labs, the project accepted the responsibility of locating otherwise out-of-work youth and training them to serve as Education Technology Trainees (ETTs). While the primary benefit to the Ministry was that these staff members could be paid at affordable levels, perhaps more important was that the project was able to demonstrate to the Ministry that such positions did not require advanced education and technology credentials. Rather, the Ministry could fill these posts with out-of-work youth eager for stable employment and the opportunity to learn ICT skills. At project's end, all the ETTs had proven themselves capable of running the day-to-day operations of the four computer centers established through the project, and the Ministry had decided to employ them to continue to do so.

Lessons

Due to time constraints, the placement and design of the computer centers was pushed through without employing the participatory, inclusive process that characterized the project as a whole. If the project were to do it again, staff would have invited far more input from the regions and the TRC managers themselves at the outset. The process would have been more effective if all partners had gathered to design the centers, select sites for the centers, and discuss cost-sharing potentials and possibilities for various roles and responsibilities. A much more thoughtful and deliberative process likely would have led to more thoughtfully placed, designed, and run centers. Project staff also could have asked potential TRCs to develop proposals for marketing, designing, operating, and maintaining their labs, with the project and the Ministry choosing from the submitted designs. This would have achieved much more directly and effectively the sense of ownership the staff constantly sought to establish throughout the project.

All of the project's successes and lessons can be

attributed to whether or not—and the extent to which—the three guiding principles of inclusion, constructivism, and cascading were followed.

1. Inclusion: A primary aim of the CATT/Namibia project was to create an environment in which Namibian colleagues could feel confident about doing their own work. This was assured through a process that put a premium on valuing colleagues' ideas. As the Namibian partners realized that the project genuinely attached merit to their ideas, they grew increasingly willing to share them.

2. Constructivism: The project's interventions were many and broadly focused. However, the single unifying thread was its effort to model and encourage constructivism as the operating paradigm and principle governing all activities. By providing a scaffolded learning environment, the RETTs, ETTs, TRC managers, and NIED were able to build on their experiences and interact with ICTs in ways that were relevant and creative. In essence, this model allowed them to see that they, too, could create constructive environments in which new users could learn without didactic teaching. Employing the previously described "invisible pedagogy," the project partners could create a fertile learning environment for those to come.

3. Scaffolding/Cascading: By creating a constructive learning environment, the project facilitated the development of both capacity and confidence among Namibian counterparts. Over time, this enabled them to share their new skills widely. In one case, for example, two members of the Katima Regional Education Technology Team (RETT) worked together to train almost 100 student teachers on their own.

One of the difficulties of this approach is to be able to step back and "take credit" where credit is due. CATT/Namibia spent a great deal of time emphasizing that the Namibian colleagues were able to work on their own. However, just as none of this would have happened without their hard work and dedication, it is equally unlikely that it would have happened without the project.

Using a behind-the-scenes approach, CATT/Namibia provided guidance and support throughout all stages of the development of the RETTs and of OSSIAR. CATT/Namibia provided leadership in developing and implementing the TRC Computer Centers and guidance in managing the centers. With the input and assistance of Namibian colleagues, the project also created the structure and developed the web site, the MMWGs, and locally-produced learning materials, as well as contributing to policy reform within the Ministry. While not responsible for the work done by the Namibian educators, project staff did assume responsibility for creating the conditions in which the Namibians themselves, with staff support, could achieve the project's objectives.

Perhaps most important, the project built trust between U.S. experts and their Namibian counterparts. This, in turn, laid the foundation for all the activities that followed. Together, CATT/Namibia and colleagues developed, designed, created, and established a solid, extensive framework for ICT integration in Namibia, a house that Namibians then could continue to build. After two years of close cooperation, careful communication, and equal collaboration, the CATT/Namibia project ended. After two years of exploring, experimenting, and learning together, now they can do it on their own.

Footnotes

[1] The Namibia activity is part of a seven-year Indefinite Quantities Contract (No. HNE-I-00-96-00018-00) of the US Agency for International Development (USAID). It was funded by the USAID Bureau of Economic Growth, Agriculture, and Trade (EGAT) and Office of Energy and Information Technology (EIT), and other USAID Bureaus, offices, and missions. It was operated by the Academy for Educational Development.

[2] Using lessons learned through the CATT/Namibia-supported computer centers, SchoolNet has developed methods for supporting schools running Windows-based systems similar to those installed in the TRCs. This is a short-term solution, though, as SchoolNet is now developing and rolling out a Linux terminal server solution that it hopes will dramatically lower costs related to the capital expenditure and maintenance for computer centers.